[**Research Activities**](https://gct.ac.in/26/research-activities)

Number of faculty members completed Ph.D - 6

Number of faculty members pursuing Ph.D – 3

**Publications:**

1. Wincy Pon Annal and Jovitha Jerome, “Performance Assessment of PID and MPC Control Algorithms Subject to Servo Tracking and Disturbance Rejection “Australian Journal of Basic and Applied Sciences, 8 (17), November 2014, pages 265-273.
2. A.S.Wincy Pon Annal, S.Kanthalakshmi, “An adaptive PID Control Algorithm for Nonlinear Process with Uncertain Dynamics”, International Journal of Automation and Control, 11(3), 2017, pages 262-273.
3. Srinivasan Kanthalakshmi, Wincy Pon Annal, “Real Time Implementation of Adaptive Sliding Mode Controller for a Nonlinear System”,  Studies in Informatics and Control, 27(4), December 2018, pages 395-402.
4. Wincy Pon Annal A S, Kanthalakshmi S, “Experimental Validation of Model Predictive Control for Nonlinear System with Delay”, Journal of Electrical Engineering, 19(3), June 2019, Pages 197-203.
5. S. Kanthalakshmi, A S Wincy Pon Annal, "Predictive Sliding Mode Controller for Continous Bio-Fermenter Systems", Control Engineering and Applied Informatics, 22(2), June 2020, Pages 33-42.
6. S. Kanthalakshmi, A S Wincy Pon Annal “Experimental Validation of Fuzzy SMC and Lyapunov Fuzzy SMC Over a Cylindroconical Fermenter” Lecture Notes in Electrical Engineering, Springer Nature Singapore Pte Ltd. 2021, Pages 1599-1607
7. C.Marimuthu,“Real Time Implementation of Model Predictive Control for Pressure Process”, ICFTEE,  Jun 2013.
8. C.Marimuthu, M.Chelliah,” Real Time Implementation of Buck-Boost Converter using LABVIEW”, AENSI, Feb 2016.
9. C.Marimuthu, M.Chelliah,” Interleaved Coupled Inductor Capacitor Resonant Boost Converter for Renewable Energy Applications” International Journal of Trend in Research and Development (IJTRD), ISSN: 2394-9333, Apr 2017.
10. Rithic, C. H., Narendran, S., & Marimuthu, C. “ECG AND PULSE OXYGEN LEVEL MONITORING AND ARRHYTHMIA CLASSIFICATION USING CNN”, International Journal of .Engineering Applied Sciences and Technology, 2021 Pages 171-176
11. S Narendran C.Marimuthu, GR Radhika, CH Rithic ”Performance Analysis of Three Phase Boost Cascaded Multi Level Inverter in Hybrid Microgrid System Using ANN Controller” International Journal of Innovative Science, Engineering & Technology, Pages 48-68 Mar 2022.
12. Nithish Kumar R and Prakash R Marimuthu C, Chelliah M “Monitoring and Estimation of Phasor Angle of PMU Signals using LabVIEW-DFT Methods”, Grenze International Journal of Engineering and Technology, 2023
13. M.Raghappriya, S.Kanthalakshmi, V. Manikandan, “Diagnosis of Faults using IMM Estimator”, ARPN Journal of Engineering and Applied Sciences, vol.7, no.6, 780-786, 2012.
14. S.Kanthalakshmi, M.Raghappriya, R Latha, “Fault Tolerant Control Design with Acceptable Performance Degradation”, ARPN Journal of Engineering and Applied Sciences, vol.10, no.2, 908-914, 2015.
15. M.Raghappriya, S.kanthalakshmi, "Non-linear model-based stochastic fault diagnosis of 2 DOF helicopter", Control Engineering and Applied Informatics, vol. 22, no.3, 62-73, 2020.
16. S.Kanthalakshmi, M.Raghappriya, "Active fault diagnosis of 2 DOF helicopter using particle filter based log-likelihood ratio", International Journal of Control, 2021.
17. Raghappriya, M., Devadharshini, K. M., & Karrishma, S. (2022). “Fuzzy Logic Based Maximum Power Point Tracking of Photovoltaic System”. Journal of Innovative Image Processing, 4(1), 49-60.
18. Raghappriya, M., & Kanthalakshmi, S. (2022). “Sliding mode observer-based fault detection for helicopter system”. Journal of Control and Decision, 1-11.
19. Raghappriya, M., & Kanthalakshmi, S. (2022). “Pitch and yaw motion control of 2 DoF helicopter subjected to faults using sliding-mode control”. Archives of Control Sciences, 32.
20. N.Arulmozhi ‘Optimization Reinforced PID-Sliding mode Controller for Rotary Inverted Pemdulum',IEEE Access, Volume; 11, 24420-24430,2023, DOI:10.1109/ACCESS.2023.3254591.
21. N.Arulmozhi 'Bioreactor Control using Fuzzy Logic Controllers', Automation & Control,Applied mechanics and Materials, Chap. 3. vol. 573,DOI: 10/4028/www.scientific.net/AMM.573.291 ,2014.
22. N.Arulmozhi “Critique On Radiographic Density Of Digitized Radiographic Weld Images Using Curve Fitting’, International Journal of Recent Trends in Engineering [ISSN 1797-9617] by the Academy Publishers, Finland.
23. N.Arulmozhi “Control of Bioreactor using Fuzzy Controllers”, National Symposium on Instrumentation, NSI-30, Cochin, Nov.30 – Dec 2, 2005,Pp 1059-1066.
24. N.Arulmozhi “Effect of Spatial Parameters during Digitization of Radiographs using Film Digitizers”, National Symposium on Instrumentation, NSI-31, Gwalior, oct.30 , 2006,OP -80.
25. N.Arulmozhi “Identification of Coarse Scattered Porosity defect in Radiographic weld images using wavelet denoising”, National Symposium on Instrumentation,NSI-32, Tiruchengudu, Oct 24-26,2007, OP-40.
26. Suguna, A., Ranganayaki, V. & Deepa, S.N. Design of Full-Order Neural Observer with Nonlinear Filter Techniques for State Estimation of a Three-Tank Process Control System. Iran J Sci Technol Trans Electr Eng 46, 1057–1087 (2022).
27. P.Mangaiyarkarasi and S. Arulselvi,  “A Robust Digital Image Watermarking Technique based on DWT and Fastica”, *International Journal of Digital Image Processing*, Vol. 4, No. 2, pp. 100-105, Feb. 2012. (ISSN NO. 0974-9691)
28. P. Mangaiyarkarasi and S. Arulselvi,  “Improved Performance by Parametrizing Wavelet Filters for Digital Image Watermarking”, *Signal & Image Processing: An International Journal (SIPIJ)*, Vol. 3, No. 1, pp. 29-38, Feb. 2012. (ISSN NO. 0976 – 7100)
29. P. Mangaiyarkarasi and S. Arulselvi, “Robust Color Image Watermarking Technique based on DWT and ICA”, *International Journal of Computer Applications*, Vol. 44, No. 23, pp.6-12, April 2012. (ISSN NO. 0975 – 8887)
30. P. Mangaiyarkarasi and S. Arulselvi, "Comparative Performance Analysis of DWT-RDWT-Curvelet based Color Image Watermarking Techniques with Extraction using Independent Component Analysis", *International Journal of Computer Applications Special Issue on Computational Intelligence and Information Security*, Vol.1, No.1, pp. 32-44, CIIS 2012. (ISBN: No. 973-93-80870-58-7)
31. P. Mangaiyarkarasi and S. Arulselvi, “Robust and Blind Color Image Watermarking Technique based on Redundant Discrete Wavelet Transform”, *Journal of Wavelet Theory and Applications*, Vol. 7, No. 1, pp. 1-17, 2013. (ISSN NO.0973 – 6336)
32. G. Thirugnanam, S. Arulselvi  and P.Mangaiyarkarasi, “A Robust Medical Image Watermarking Scheme based on Discrete Wavelet Transform and Extraction using Independent Component Analysis”, *International Journal of Biomedical Engineering and Consumer Health Informatics,*Vol. 1, No. 1,pp.47-50, Jan-June 2009. (ISSN NO. 0973-6727).
33. G. Thirugnanam, S. Arulselvi  and P. Mangaiyarkarasi, “Comparison of Independent Component Analysis for DWT based Digital Image Watermarking”, *Journal of Advanced Research in Computer Engineering,* Vol.3, No.1, pp. 165-169, Jan-June 2009. (ISSN NO. 0974-4320)
34. G. Thirugnanam, S. Arulselvi  and P. Mangaiyarkarasi, “Wavelet-based watermarking scheme using filter parametrisation for medical images”, *International Journal of Medical Engineering and Informatics*, Vol. 1, No.4, pp. 435-444, 2009. (ISSN NO. 1755-0653).
35. G. Thirugnanam, S. Arulselvi  and P. Mangaiyarkarasi, “Wavelet Packets based Digital Watermarking for Image Authentication and Extraction using Independent Component Analysis”, *Journal of Advanced Research in Computer Engineering*, Vol. 3, No. 2, pp. 473-477, July-Dec. 2009. (ISSN NO. 0974-4320)
36. G. Thirugnanam, S. Arulselvi  and P. Mangaiyarkarasi,” Comparison of Independent Component Analysis for DWT based Digital Image”, *International Journal of Intelligent Information Processing*, Vol. 3, No. 2, pp.319-327, July-Dec. 2009. (ISSN NO. 2233-9426)
37. S. Elango, G. Thirugnanam and P. Mangaiyarkarasi,” An Efficient Video Watermarking technique using Wavelet Packet Transform and Extraction by ICA”, *International Journal of Exploring Emerging Trends in Engineering (IJEETE)* Vol. 03, Issue 02, pp. 143 – 148, Mar-Apr, 2016 .( ISSN NO.– 2394-0573 )
38. S. Elango, G. Thirugnanam and P.Mangaiyarkarasi, “Wavelet Packet based Transform Watermarking and Extraction using Independent Component Analysis”, *Journal of Advances in Information Technology*, Vol.7, No.3,    pp. 156-160, 2016.( ISSN NO.1798-2340)
39. S. Elango, G. Thirugnanam and P.Mangaiyarkarasi, “Video Watermarking Method in Multiwavelet Domain and Extraction using Fast Ica”, *Asian Journal of Research in Social Sciences and Humanities,*Vol. 6, No. 9, pp. 629-641, September 2016. ( ISSN NO. 2249-7315)
40. K. Rajmohan. G. Thirugnanam and P.Mangaiyarkarasi, “Region based Segmentation for Medical Images”, *International Journal of Exploring Emerging Trends in Engineering (IJEETE)*, Vol. 03, Issue 04,, Pg. 304 – 309,  JUL-AUG, 2016 .( ISSN NO. 2394-0573)
41. K. Rajmohan. G. Thirugnanam and P.Mangaiyarkarasi, “Wavelet Packet and Watershed Transform Based Hybrid Image Segmentation for Satellite Image”, *World Applied Sciences Journal,*Vol, 34, No. 8, pp, 1139-1143, 2016..( ISSN NO. 1818-4952)
42. K. Rajmohan. G. Thirugnanam and P.Mangaiyarkarasi, “Hybrid Segmentation Technique based on Dual Tree Complex Wavelet Transform and Watershed Algorithm for Satellite Images” Journal *of Chemical and Pharmaceutical Sciences*, vol,.10  Issue 2, pp. 221-224, February 2017. ( ISSN NO. 0974-2115)
43. K. Rajmohan. G. Thirugnanam and P.Mangaiyarkarasi, “Medical Image based Segmentation using DTCWT and Marker Controlled Watershed Algorithm”, *Journal of Chemical and Pharmaceutical Sciences*, Volume 10 , Issue 3, pp. 998-1001, April - June 2017. (ISSN NO. 0974-2115)
44. P. Santhi, G.Thirugnanam and P. Mangaiyarkarasi, “Image Fusion Technique for Multi-Resolution Medical Images using Directional Contourlet Transform”, *World Applied Sciences Journal*, Vol.34, No.9, pp.1177-1182, 2016. .( ISSN NO. 1818-4952)
45. P. Santhi, G.Thirugnanam and P. Mangaiyarkarasi, “Wavelet Packet based Image Fusion method for Medical Images”, *Journal of Chemical and Pharmaceutical Sciences*, JCHPS Special Issue 2:, pp. 250-252, February 2017 (ISSN NO. 0974-2115)
46. P. Santhi, G.Thirugnanam and P. Mangaiyarkarasi, “Medical Image Fusion scheme using Wavelet Based Contourlet Transform and Directive Contrast method”, *Journal of Chemical and Pharmaceutical Sciences*, Vol. 10, No.3, pp.1420-1422, 2016, (ISSN NO. 0974-2115)
47. S. Elango, G. Thirugnanam and P.Mangaiyarkarasi, “Multiwavelet based Video Watermarking and Extraction using Independent Component Analysis*”, International Journal of Electrical and Computer Engineering (IJECE*), Vol.2, No.3, pp. 31- 37, 2016 (ISSN NO. 2088-8708)
48. K. Sivakannan, G.Thirugnanam and P. Mangaiyarkarasi, “A Reversible Image Authentication Technique based Watermarking in ICA-DWT Combined Approach”, *Journal of chemical and pharmaceutical Sciences*, special issue. 2, pp. 232–235, 2017. (ISSN NO. 0974-2115).
49. K. Sivakannan, G.Thirugnanam and P. Mangaiyarkarasi, “Hybrid Image Watermarking Technique Based on ICA and Shearlet Transforms”, *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, Vol. 8, No. 2, pp. 2379-2386,  March–April 2017 (ISSN NO. 0975-8585)
50. P. Mangaiyarkarasi and G. Thirugnanam, "Optimisation of Wavelet Coefficients Using Genetic Algorithm for ECG Compression", *Annamalai  University Journal of Engineering and Technology (AUJET)*, Vol.1, Issue.1, pp. 6-12, 2005.
51. Nanmaran Rajendiran, Thirugnanam Gurunathan and Mangaiyarkarasi Palanivel “Wavelet packet transform-based medical image multiple watermarking with independent component analysis extraction” International Journal of Medical Engineering and Informatics , May 7, 2020, pp 322-335.
52. T. Suganya1\*, G. Thirugnanam, V. Rajendran,P. Mangaiyarkarasi, “Modelling and Simulation of a PhotovoltaicCell for Green Instrumentation Technology”, Journal of Innovative Image Processing(ISSN: 2582-4252).
53. Rajendiran, Nanmaran, Thirugnanam Gurunathan, and Mangaiyarkarasi Palanivel. "Wavelet packet transform-based medical image multiple watermarking with independent component analysis extraction." International Journal 12.4 (2020): 322-335.
54. B.Achiammal, Dr.R.Kayalvizhi, “*Optimal Tuning of PI Controller using Bacterial Foraging  Algorithms for Power Electronic Converter*”,  International Journal of Soft Computing and Engineering (IJSCE), Vol 3, No 5, pp 235-239,  ISSN:2231-2307, November 2013 .
55. B.Achiammal, Dr.R.Kayalvizhi, “*Optimal Tuning of PI Controller Using Genetic Algorithm for Power Electronic Converter*”, International Journal of Engineering Research & Technology (IJERT), Vol. 2,  No 11, pp 2935-2940,  ISSN2278-0181, November – 2013.
56. B.Achiammal, Dr.R.Kayalvizhi, “ *Optimization of PI Controller using PSO for Power Electronic Converter*” , IOSR Journal of Electrical and Electronics Engineering(IOSR-JEEE), Vol 9, No 2, pp 36-40, ISSN 2320-3331,  April 2014.
57. B.Achiammal, Dr.R.Kayalvizhi, “*Comparison of tuning algorithms of PI controller for power electronic converter*”, ARPN Journal of Engineering and Applied Sciences, Vol. 10, No. 8, pp. 3313-3318, ISSN 1819-6608, May 2015.
58. B.Achiammal, Dr.R.Kayalvizhi, “Hardware Implementation of Optimized PI Controller for Luo Converter”,  International Journal of Applied Engineering Research, Vol 10, No.14,  pp.No 34899-34905, ISSN 0973-4562, November 2015.
59. B.Achiammal,  R.Kayalvizhi, “Hardware Implementation of Modified Bacterial Algorithm of PI Controller for Elementary Luo Converter”, Taga Journal, Vol. 14, pp. No 3089-3098, ISSN :1748-0345, March 2018.
60. Dr.B.Achiammal, “Self-Operational Wastewater Treatment Plant using Supervised Learning Algorithm”, International Journal of Advanced Science and Technology, Vol. 29, No. 3, , pp 11709-11716, 2020.ISSN: 2005-4238.
61. Dr.B.Achiammal, “Simulation and Real Time Implementation of PI Controller for Power Electronic Converter Based on Genetic Algorithm”:, International Journal of Scientific Research and Review, Vol 7, No: 5,pp.1768-1779, 2019.
62. Dr.B.Achiammal, “A Novel Approach to Regulate Machine Learning Algorithm”, International Journal of Scientific Research and Review, , Vol 7, No: 5, pp.2063-2070, 2019.
63. Dr.B.Achiammal, ANFIS Modeling for Auto Regulation of PCO2 in Perfusion System”, International Conference on Breakthrough in Engineering, Science & Technology, vol 1, pp.123-128, 2019.
64. Dr.B.Achiammal, “Artificial Intelligence Based Smart Wastewater Treatment System for Industries”, International Journal of Design Engineering, Vol 1, Issue 7, pp 3604 -3621, 2021. ISSN: 0011-9342.
65. Dr.B.Achiammal, “Implementation of Soft Computing Techniques for Luo Converter”, International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, Vol. 9,Issue 10, pp 50-56, October 2021, ISSN (O) 2321-2004.
66. Anbu, S., & Jaya, N. (2014). Design of adaptive controller based on Lyapunov stability for a CSTR. World Academy of Science, Engineering and Technology International Journal of Electronics and Communication Engineering, 8(1), 176-179.
67. Anbu, S., & Jaya, N. (2014). Design of gain scheduling adaptive control for continuous stirred tank reactor. *International Journal of Automation and Control*, *8*(2), 141-157.
68. Anbu, S., Jaya, N., &Murugan, R. (2013, March). Performance evaluation of Multi Model and gain scheduling control for CSTR. In *2013 International Conference on Circuits, Power and Computing Technologies (ICCPCT)* (pp. 528-534). IEEE.
69. Anbu, S (2016) Multiloop Control of Continuous Stirred Tank Reactor Using Biggest Log Modulus Method, Asian Journal of Electrical Sciences, Vol. 5, No. 2, 2016, pp. 54-61
70. S. Anbu, M.Senthilkumar (2018), Modelling and Analysis of Continuous Stirred Tank Reactor through Simulation, Asian Journal of Engineering and Applied Technology,Asian Journal of Engineering and Applied Technology Vol.7 No.1, 2018, pp. 78-83
71. S Anbu, M Senthilkumar and T S Murugesh, “Design of a Multiloop Controller for a Nonlinear Process” International Journal of Advanced Computer Science and Applications (IJACSA), 13(4), 2022.
72. Kanthalakshmi S., Wincy Pon Annal A. S.. An Experimental Validation of Model Based Control Techniques for Interacting Nonlinear Systems. Design, Construction, Maintenance. 2023;3:285-292. 10.37394/232022.2023.3.28
73. Kr Radhika Gr, Marimuthu C , Janani V “Industrial Boiler Tank Process Automation Using State-Of-The-Art Cascade Control Methods” Journal Of Computer Research And Development 24 (8), 1-8
74. Ra Radhika Gr, Marimuthu C , Priyadharshini G “Cnn Based Intelligent Hand Gesture To Speech Conversion For Physically Challenged People” Journal Of Technology 12 (7), 553-562
75. 4.    Marimuthu C, Deepak Kumar M , Santhasivam A, Thivagarmurugan V “Control Techniques For Hydraulic Pitch And Yaw Adjustment In Wind Turbines Using Graphic System Design” Journal Of Technology Scopus Indexed Issn 10123407 12 (1), 421-431
76. Marimuthu C, Deepak Kumar M , Santhasivam A, Thivagarmurugan V” Control Techniques For Hydraulic Pitch And Yaw Adjustment In Wind Turbines Using Graphic System Design” Journal Of Technology Scopus Indexed Issn 10123407 12 (1), 421-431
77. Jj C. Marimuthu, V. Manikandan “Sustainable Energy Development Prediction Of Energy Harvesting System With An Adaptive Hierarchical Recurrent Network And Biodynamic Fusion Optimisation Algorithm” Journal Of Environmental Protection And Ecology 24 (8), 2796-2805
78. 7.    Jj C. Marimuthu, V. Manikandan “Advancements In Piezoelectric Energy Harvesting For A Sustainable Development: A Comprehensive Review Of Environmental Prediction Methods” Journal of Environmental Protection and Ecology 24 (8), 2786-2795
79. Raghappriya, M., & Kanthalakshmi, S. (2022). Sliding mode observer-based fault detection for helicopter system. Journal of Control and Decision, 10(4), 465–475. <https://doi.org/10.1080/23307706.2022.2098838>
80. 9.    Raghappriya, M., Kanthalakshmi, S. Particle filter-based adaptive super-twisting sliding mode fault-tolerant control for helicopter systems. Int. J. Dynam. Control 12, 1926–1941 (2024). <https://doi.org/10.1007/s40435-023-01336-w>